AHJEONG SEO

Samsung Research
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RESEARCH INTEREST

My primary research goal is to **develop robustly reasoning AI like humans** through structured and disentangled inference. I'm especially interested in the explicit and robust reasoning process via traversing over concept graphs constructed with neuro-symbolic approaches. Currently, I am researching improving logical reasoning performances of large-scale models with this method in Samsung Research.

RESEARCH PUBLICATIONS

Neuro-Symbolic Graph Reasoning for Robust Inference in Neural Sequence Models (in preparation)
Ahjeong Seo, Joohyung Lee, *The First Workshop on UM-IoS: Unimodal and Multimodal Induction of Linguistic Structures (EMNLP 2022 Workshop)* December 2022

Attend What You Need: Motion-Appearance Synergistic Networks for Video Question Answering
Ahjeong Seo, Gi-Cheon Kang, Junhan Park, Byoung-Tak Zhang, *The Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP 2021)* August 2021

DramaQA: Character-Centered Video Story Understanding with Hierarchical QA
Seongho Choi, Kyoung-Woon On, Yu-Jung Heo, Ahjeong Seo, Youwon Jang, Minsu Lee, Byoung-Tak Zhang, *Proceedings of the Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI 2021)* February 2021

Sparse Self-Attention Mechanism for Learning Sequential Video Data
Ahjeong Seo, Kyoung-Woon On, Byoung-Tak Zhang, *Korea Software Congress 2019 (KSC 2019)* December 2019

WORK EXPERIENCE

AI Methods Team, Samsung Research Aug. 2021 - Now
Researcher (Adviser: Joohyung Lee) *Seoul, Korea*

- **Large-Scale AI**: Researching a dual-system model complementing the reasoning limitations of Samsung's large-scale model applications with a neuro-symbolic graph approach, and planning to submit a paper to the EMNLP 2022 Workshop.
- **Neuro-Symbolic Contents Search**: Developed a search engine for movie contents considering both lexical and semantic clues in queries. Specifically, experimented with neural models for semantic search, contributed to a keyword search engine with Elastic Search, and collected and cleaned content data.

RESEARCH PROJECT

Video Turing Test Sep. 2019 - Aug. 2021
Researcher at Seoul National University (Adviser: Byoung-Tak Zhang)

- **Research (AAAI 2022, ACL 2021)**: Aimed to build an AI with human-level intelligence for video understanding, conducted research to allow the AI to robustly and explicitly reason via structuring information based on interdisciplinary knowledge. Proposed a model combining divided visual signals depending on texts for multimodal reasoning based on human visual processing for ACL 2021. Recommended the DramaQA dataset and a baseline model for hierarchical video understanding based on human cognitive development stages for AAAI 2021.
- **Organizing Challenges and Workshops (ECCV 2020, ICCV 2019)**: Participated in organizing DramaQA challenges and Video Turing Test workshops, managed EvalAI challenge server, and built the homepage: `https://dramaqa.snu.ac.kr/`

EDUCATION

Seoul National University Sep. 2019 - Aug. 2021
Master of Science in Neuroscience *Seoul, Korea*
Interdisciplinary Program in Neuroscience *(Adviser: Byoung-Tak Zhang)*
Thesis: Motion-Appearance Synergistic Networks for Video Question Answering

Hanyang University Mar. 2014 - Aug. 2019
Bachelor of Engineering in Computer Engineering, Minoring in Industrial Engineering *Seoul, Korea*
Department of Computer Engineering

INTERNSHIP

Clova Biz AI, Naver Corp. Nov. 2018 - Feb. 2019
Apollo Backend, Naver Corp. Jul. 2018 - Aug. 2018
Intern *Seongnam-si, Korea*

- Experimented with ML models for a website project and various service demonstrations
- Generated and pre-processed data, built docker environment and APIs, and developed website with Spring Framework, jQuery Ajax, HTML, and CSS.

HONORS AND AWARDS

International Short-Term Dispatch Program Scholarship, Hanyang University Jun. 2016
Dean's Encouragement Award, Hanyang University Nov. 2014
Honors Scholarships, Hanyang University Sep. 2014

EXTRA-CURRICULAR

Algorithm Club at Hanyang University Mar. 2014 - Aug. 2019
- Participated in algorithm study groups, and received Dean's Encouragement Award in an in-school competition

Hanyang University Buddy Assistants Jan. - Feb. 2018
- Organized and participated in many activities and helped foreign students adapt to Korean culture and life

Short-term Overseas Dispatch Program, University of Indonesia Jul. - Aug. 2016
Exchange Student, Nanyang Technological University Jan. - May 2016
- Developed cultural competence via activities ranging from field-trips to participating in a school club.

SKILLS AND LANGUAGE

Technical Skills Pytorch, Tensorflow, Python, C++, C, HTML, R, Java
Language Proficiency Fluent in **English** and Native in **Korean**

REFERENCES

Byoung-Tak Zhang
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Research Professor

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